

Abstract

A method and apparatus are provided for transmitting and receiving multiple RF/microwave subcarriers on a single optical wavelength over an optical link. The method includes the steps of modulating a plurality of RF/microwave subcarrier frequencies with a respective communication signal and modulating an optical carrier wave with the plurality of modulated RF/microwave subcarrier frequencies. The method further includes the steps of detecting the plurality of RF/microwave subcarriers of the optical carrier wave and mixing those subcarriers with a first local oscillator (LO) frequency to create a new heterodyne IF frequency above the highest frequency component of the modulated signal spectrum of the detected subcarriers, filtering an RF/microwave subcarrier frequency of the plurality of detected RF/microwave subcarriers utilizing a bandpass filter at an IF center frequency of the new IF frequency and mixing the filtered RF/microwave subcarrier with a second local oscillator (LO) frequency to derive a difference frequency at a desired center frequency for propagation over the subsequent network element.